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ENGAGE: A Game Based Learning and Problem Solving
Framework (Task 1 Month 12)
Progress, Status and Management Report
Monthly Progress Report

Period Covered by the Report
February 1 through February 28, 2012

Date of Report: March 15, 2013

Project Title:
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Technical Information

1. Technical Progress / Highlights - Observations

We have finished the first trial at UCDS and are performing ongoing trials at Interagency schools. We are currently analyzing the data from those trials for information on how to improve the games' learning transfer, game design, and implementation strategies. We are also preparing for new trials at Greenlake Elementary and Lowell Elementary.

We updated the games to the latest versions on BrainPOP and K12.com. These latest versions incorporate improvements to the game design, scaffolding and tutorials, logging, and (in the case of K12) assessment. Note that we are currently experiencing issues with K12.com as a partner (see below).

We are gearing up for a large "algebra challenge" focused on Washington state later this year to encourage teachers and parents to sign up to solve equations using DragonBox. Preparing for the challenge will involve some changes and improvements to our teacher portal interface in order to make sign up process and assignment of levels as simple as possible, since a big takeaway from classroom studies has been that the 15-20 minutes of time spent getting all students set up on machines with the right logins, correct URLs, etc. is a large barrier to entry for many educational games.

We are continuing work on porting the games to iOS and Android tablets.

We prepared for the DARPA ENGAGE PI Meeting, to be held March 5-6 in Arlington, VA.

2. Results or Problems and Solutions

In advance of the large-scale trial of DragonBox in the Algebra Challenge, we held intensive playtesting sessions of the game. Key areas of improvement elucidated from our playtesting are:

- Look at how to replace the text tutorial sequence at the start. It takes a fair amount of time to complete and does not always convey the message that the box needs to be alone. Early on, players often focus in on trying to eliminate every card they can find rather than thinking about moves to further isolate the box. One solution might be to have some animation instead where dragon is outside the box and looks happy, when the green swirl cards show up the dragon looks sad and jumps into the box. This would play only for the first level.
- The "multiply all" or "divide all" mechanics should appear differently when the blank card hint is showing, since it is very tempting to drop them into the blank spaces at that point. Related to this is an idea to make the imbalance a different color to differentiate between an imbalance caused by addition vs. an imbalance caused by multiplication/division.
- While the players enjoyed the ending animations at first, they did get somewhat repetitive. Near the end of the tests, the players did not seem nearly as interested in watching the sequences as they did at the start. Instead, we might have a quick animation playing most of the time, perhaps just the dragon quickly popping out and looking happy, while the fancier and longer animations play at the end of every x number of levels.

We have been experiencing issues with one of our partners, K12.com. We had asked K12 for our games to be consistently placed in the curriculum where the games and the curriculum are mapped to the Common Core Standards. Refraction is currently ok with links in 64 locations throughout the curriculum. However, the links for Creature Capture and Treefrog are under-represented with links in only 8 and 6 locations throughout the curriculum. K12 has stated they do not have time to place any more links and would not be able to put any additional time to it. Additionally, K12 has not been forthcoming with demographic data requests. It took approximately 6 months to get the Spring demographic data from them, and when we did, it was for only 721 of the 5207 UIDs we submitted. More than a month has

passed without any explanation or progress on this issue. Finally, though we had discussed a system that would let us know where in K12's curriculum game players were coming from (in order to be able to analyze data with knowledge of players' potentially having encountered the material before), K12 informed us that they cannot implement such a system in time for academic year '13-'14.

3. Significant Accomplishments Anticipated During Next Reporting Period

- Preliminary results from the Greenlake and Lowell Elementary schools
- Separate the logging databases from other databases for performance and scalability
- Performance caching scheme in place for retrieval of logging data
- Create the front-end for the Algebra Challenge registration page

4. Publications relevant to this effort

No new research papers were published in the February 1 – 29 timeframe.

5. Meetings and Events (Please include meetings with subcontractors)

- N/A

6. Changes to the Contract Organization

None.